

**Notice of Allowability**

Application No.

10/628,782

Examiner

Hashem Farrokh

Applicant(s)

KANEKO ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 7/6/06.
2. ☒ The allowed claim(s) is/are 1-4 and 6-24.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment                               |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance   |
|   | 9. <input type="checkbox"/> Other _____.   |

*The terminal disclaimer filed on 7/6/06 is proper and has been recorded. In view of filing a Terminal Disclaimer, the provisional rejection based on a nonstatutory double patenting ground is withdrawn in this Action.*

**PART I                    THE EXAMINER'S EVALUATION OF THE APPLICATION**

**SECTION A            RELEVANT ART CITED BY THE EXAMINER**

*The prior art made of record and not relied upon are as follows:*

- 1.     U. S. Patent Publication No. 2003/0159001 A1 to Chalmer et al. describes Distributed, scalable data storage facility with cache memory.*
- 2.     U. S. Patent No. 6,912,669 B2 to Hauck et al. describes Method and apparatus for maintaining cache coherency in a storage system.*
- 3.     U. S. Patent No. 6,321,298 B1 to Hubis describes Full cache coherency across multiple raid controllers.*

**SECTION B            DISTINGUISHING FEATURES RECITED IN THE CLAIMS**

*The following is an Examiner's Statement of Reasons for Allowance See MPEP 1302.14*

- 4.     The primary reason for allowance of claims 1-2, 6-14, 18-20, and 24 in instant application is the combination with the inclusion of the following limitations: each of cache memories connected to each of the corresponding respective input/output channels; wherein an analysis of the data input/output request is performed to determine whether maintaining consistency of data stored in each cache memory*

is necessary and the sequence of execution is controlled so that said first operation is executed first if maintaining consistency is not necessary.

5. *The primary reason for allowance of claims 3-4 in instant application is the combination with the inclusion of the following limitations: each of cache memories connected to each of the corresponding respective input/output channels; wherein a consistency maintaining module performs the consistency maintaining processing depending on a content of the data input/output request.*

6. *The primary reason for allowance of claims 15 and 21 in instant application is the combination with the inclusion of the following limitations: each of cache memories connected to each of the corresponding respective input/output channels; the data input/output request includes an identifier for identifying at least one of the logical volumes that is a subject of the data input/output request, and further comprising a module that performs the control of the execution order according to the identifier included in the data input/output request.*

7. *The primary reason for allowance of claims 16-17 and 22-23 in instant application is the combination with the inclusion of the following limitations: each of cache memories connected to each of the corresponding respective input/output channels; a module that, upon receiving a data write request as the data input/output request, writes data designated by the data write request in the disk drive device, and sends a write request for the data to the other disk array device.*

*The prior art of record including the disclosures of Chalmer et al. (2003/0159001 A1), Hauck et al. (6,912,669 B2), and Hubis (6,321,298 B1) neither anticipates nor renders obvious the above-recited combination.*

*Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays should be clearly labeled "Comments on Statement of Reasons for Allowance"*

**PART II                      THE ATTENTION OF FUTURE CORRESPONDENT**

*Any inquiry concerning this communication should be directed to Hashem Farrokh whose telephone number is (571) 272-4193. The examiner can normally be reached Monday-Friday from **8:00 AM to 5:00 PM**.*

**:IMPORTANT NOTE:**

*If attempt to reach the above noted Examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Donald A Sparks, can be reached on (571) 272-4201. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published application may be obtained from either private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information*

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*about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBS) at 866-217-9197 (toll-free).*

*HF*

*2006-06-13*